SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM

Date Form Completed: February 17, 2015

General Site Information

Region:	6	City:	Dallas	State:	TX
CERCLIS EPA ID:	TXN000605460	CERCLIS Site Name:	Jones Road Ground Water Plume		
NPL Status: (P/F/D)	Final	Year Listed to NPL:	2003		

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The Site is located in the northwest portion of Harris County, Texas. The source of contamination is a former dry cleaning facility (operated 1988 to 2002), which was located within the Cypress Shopping Center at 11600 Jones Road, approximately one-half mile north of the intersection of Jones Road and FM 1960, outside the city limits of northwest Houston, Texas. The area around the Site is characterized by residential, commercial, and light industrial development. Residential development has been active since the 1960s. Jones Road is the principal north-south corridor through the area, and FM 1960 (approximately one-half mile to the south) provides a southwest-northeast corridor. Commercial development is dominant along Jones Road with residential and limited commercial development along the side streets.

The basis for taking action at the Jones Road site is that drinking water standards have been exceeded in area private water wells screened in the Chicot Aquifer. Area aquifers include the Chicot (ground surface to approximately 400 feet below ground surface [bgs] and the Evangeline (below 400 feet bgs). Historically, many private and some municipal water supply wells drew water from the affected depths of the Chicot Aquifer. Most regional water supplies currently draw from the Evangeline or surface water sources. No contamination has been detected in groundwater samples collected from the Lower Chicot/Evangeline Aquifer interface to date (2008 most recent sample). At this time, no information is available that suggests that the Evangeline aquifer is affected.

An affected shallow perched water-bearing zone is located approximately 25 to 35 feet bgs in the Upper Chicot Formation. The perched saturated unit is referenced for the site as the Shallow Water-Bearing Zone (WBZ). The Shallow WBZ is not a current drinking water supply. The primary remedial concern for this perched unit is that it may be an ongoing source of contamination to the underlying Lower Chicot WBZ, a historical source of drinking and irrigation water classified as a potential drinking water source by the state (Class I, water). Currently, area municipal water supply wells are screened in the deeper Evangeline unit. *The Shallow WBZ is the focus of this response action review.*

The hazardous substances present in ground water at the Site include perchloroethylene, also known as tetrachloroethylene (PCE), and related daughter products trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2 DCE), trans-1,2-dichloroethylene (trans-1,2 DCE), and vinyl chloride (VC).

General Project Information

Type of Action:	Remedial	Site Charging SSID:	06NK
Operable Unit:	01	CERCLIS Action RAT Code:	

Is this the final action for the site that will result in a site construction completion? ☐ Yes ☒ No

Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control? ☐ Yes ☒ No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

The Jones Road Superfund Site was added to the National Priorities List (NPL) September 29, 2003, followed by Remedial Investigations (RI) under CERCLA. As part of a removal action, a waterline was installed at the Site to provide municipal water services to the residents and businesses whose private drinking water wells were affected by releases of PCE. Waterline construction was initiated on November 20, 2007, with installation of the main waterline and service connections. Those activities were completed on November 18, 2008, and resulted in the installation of 144 service connections. Approximately half of the residences and businesses located within the area of impacted ground water chose not to connect to the municipal water supply. Consequently, the human health exposure pathways for ingestion and dermal contact may still be open for that population.

Concurrent with the removal action, the RI and Feasibility Study were completed under State-lead in 2009 and supported remedy selection for the site in the September 2010 Record of Decision (ROD). Part of the selected remedy for ground water specified that those private wells, replaced by connections to the public water system, be plugged and abandoned. Plugging the private wells that were no longer needed was necessary to minimize further migration of the Lower Chicot contaminant plume from active pumping and to prevent vertical migration of contaminants through the open boreholes. A total of 93 private water supply wells were plugged throughout the period of October 27-November 13, 2011.

The current design phase has focused on an extensive hydraulic containment/pump and treat for contaminated ground water for the Lower Chicot Water-Bearing Zone (WBZ) and the Shallow WBZ. A pilot project has been conducted to clarify in-situ processes and determine the most effective amendments to degrade contaminants in the Shallow WBZ. Additional work during design also identified a significant vapor source in an unsaturated portion of the Lower Chicot, just above the deeper aquifer. This vapor source was not identified during the initial RI, FS, or ROD, but will be addressed in a ROD Amendment later this FY15.

In January 2013, Region 6 nominated the Jones Road project for further design evaluation to optimize the remedial response to address soil and ground water contamination to "achieve maximum protectiveness while improving cost and energy efficiency and minimizing time" to reach cleanup goals. The project team met with the EPA HQ optimization team in April 2013. The recommendations of the optimization team were formalized in the "*Optimization Review, Jones Road Superfund Site, September 2014*, EPA (542-R-14-006)" which redirected the sequencing of the project to prioritize source reduction of the Shallow Soil, Shallow WBZ, and the Unsaturated Chicot. This approach targets the majority of the contaminant mass with the greatest potential for continued contribution of contaminants to the Lower Chicot aquifer.

Most importantly, the optimization review team recommended that the current design for hydraulic containment of the Lower Chicot ground water plume be delayed indefinitely until the three source areas area, overlying the Lower Chicot, are mitigated. Source reduction is expected to reduce contaminants and the underlying plume with time, and will be verified with monitoring. *The project team is implementing the recommendations of the Optimization Review and moving forward on a response action for one of the three defined source areas, the Shallow WBZ, in this response action.*

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

Funding is requested to initiate the In-Situ Bioremediation (ISB) in the high contaminant concentration areas of the Shallow WBZ (Water-Bearing Zone) and to monitor ground water concentrations for VOCs. The initial injection for the ISB remedy can be implemented through direct push technology, based on the expected ease of implementation and the target depth of 30-50'. Assuming the target treatment zone is limited to a 100-foot by 200-foot area with 10 feet of saturated thickness, the remedy cost is estimated at $500,000 for 66,000 pounds of emulsified vegetable oil diluted by more than 150,000 gallons of potable water and approximately 30 days of two DPT rigs and crews to conduct the injections (1 injection round).

Additional field work is underway (4/2015) to define the extent of contamination for the Shallow WBZ (~6 additional well points) for the final ISB design and to sample the Shallow WBZ network to establish a pre-injection baseline. The final design (completion by 8/2015) will be based on the extent of contamination footprint, the baseline sampling results, and the injection parameters developed through the field pilot test.

The Shallow WBZ ISB is the only element of the current design that will be carried forward to the remedial action phase at this time. The decision to proceed with the ISB at this time is based on: the demonstrated rate of degradation of COC contaminants in the field pilot; and the optimization review recommendation to prioritize reduction of contaminant sources for the Lower Chicot aquifer.

Completion of the final design for the Shallow WBZ ISB is scheduled for 8/2015. The RA start is scheduled for 9/01/2015.

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

The 2010 ROD selected the following remedy:

- Hydraulic Containment/Pump and Treat for the Shallow WBZ source area and Lower Chicot WBZ. Two treatment systems would process contaminated ground water from both zones, (estimated 420 million gallon volume/year) for proposed containment of the contaminant plume and treatment on extracted water;
- In-Situ Treatment for Shallow soil and ground water with amendments chosen based on treatability studies;
- Plug private wells (Lower Chicot WBZ) and provide public water supply connections. [Actions have been completed];
- Institutional Controls to restrict excavation or drilling into the impacted areas;
- Ground Water Monitoring for the Shallow WBZ and Lower Chicot WBZ to assess remedy performance, progress toward remedial goals and protectiveness;
- Indoor Air Investigation to assess seasonal variability of indoor air in the area of the initial release and assess a vapor intrusion exposure pathway.

The optimization team reviewed both the priorities of the selected remedy and the current design scope. Through the course of their evaluation, the following data gaps, or uncertainties, were identified:

- Extent of contamination for the Shallow WBZ (currently being addressed);
- Extent of contamination for the Lower Chicot WBZ;
- Ground water flow direction and the magnitude of extraction in the Lower Chicot has been quite variable, making it difficult to confidently predict plume migration;
- Extent of the soil vapor phase for the shallow soils;
- Field work in October 2011 identified a significant vapor phase (130,000 micrograms per cubic meter PCE at SVE-2), located in an unsaturated section of the Lower Chicot, ~ 60-110' bgs. This vapor phase was not identified by the earlier remedial investigation and therefore not included in the 2010 ROD. It is now considered a significant source with potential to impact the underlying Lower Chicot aquifer. Lateral extent of this vapor phase has not yet been totally defined.

A supplemental RI/FS is being planned for this summer (2015) to address these data gaps; to provide a current status of the Lower Chicot ground water; and to support a ROD Amendment at the end of the calendar year 2015. The ROD Amendment will select a remedy for the unsaturated Lower Chicot interval and prioritize/sequence source reduction. Source reduction/removal will be implemented and results monitored for the dissolved phase ground water plumes for the two target zones. Depending on those monitoring results, the initial pump and treat remedies for the Shallow WBZ and the Lower Chicot WBZ could be focused to a much smaller footprint, or may not be needed at all. Construction completion for the site will most likely move to 2018+ as monitoring will be needed to validate the effects of source reduction to the underlying Lower Chicot aquifer.

Response Action Cost

Total Cost of Proposed Response Action:

($ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

$500,000

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc…)

Optimization Review Report, Jones Road Superfund Site, Harris County, TX (September 2014); final design is not yet final.

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds $10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

It is anticipated that implementation of this response action (application of the amendment/two quarterly sampling events) will be complete by Q3/2016, if money is made available by Q4/2015.

Other information or assumptions associated with cost estimates?

Readiness Criteria

1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?

SSC was signed by EPA on May 23, 2011 and signed by TCEQ on July 19, 2011. The response action is covered under this SSC, with no revision anticipated.

2. If Non-Time Critical, is State cost sharing (provide details)?

N/A

3. If Remedial Action, when will Remedial Design be 95% complete?
RD for the Shallow WBZ ISB will be completed in 8/2015.
4. When will Region be able to obligate money to the site?
9/2015
5. Estimate when on-site construction activities will begin:
10/2015
6. Has CERCLIS been updated to consistently reflect project cost/readiness information?
Yes

Site/Project Name:	**Jones Road Ground Water Plume**

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)

Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:

The contamination in this shallow Chicot zone (25-35') bgs) is acting as a continuing source of contaminants to the underlying Lower Chicot aquifer, which continues as a water source for those homes and businesses that have active private wells in the area. Where those active wells are within the Lower Chicot ground water plume, that population can be expected to be exposed to PCE and related contaminants, at levels exceeding the MCL. Approximately 231 public water supply (PWS) and private wells have been identified within a one-half-mile radius of the former Bell facility. The local hydraulic gradient in the Jones Road area has changed as a result of homeowners turning off their water supply wells and connecting to the waterline. Whereas the local gradient was previously northward (from the Bell facility towards the neighborhood north of Jones Road), it is now more southwesterly.

Without this response action, the Shallow WBZ source will continue to feed higher concentrations of the site contaminants to the underlying Lower Chicot aquifer. The resulting contaminant plume can be expected to potentially expand and/or migrate further downgradient to other active private and public water wells drawing from this locally significant aquifer.

One of the remedial action objectives (RAOs) for the site is to prevent or minimize further migration of the contaminant plume. Achieving this RAO is critical since there are PWS and private wells downgradient of the Jones Road site. The following [next response] is an estimate of people anticipated to be exposed in the absence of future EPA action. For the current estimate, it was assumed that 231 wells are located within a ½ mile radius of the site; 130 well owners connected to the public water supply; 100 wells remained with potential for PCE exposure; 4 people per private well. Another 25 wells/per 10 years of plume migration are assumed for the projected impacts at the 10 year and 10+ year estimate.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

Medium	<2yrs	<10yrs	>10yrs
Ground Water	400	400-500	400-600

Discuss the likelihood that the above exposures will occur:

As discussed above, the local groundwater gradient was previously northward (from the Bell facility towards the neighborhood north of Jones Road), it is now more southwesterly. This change is very likely due to the reduced hydraulic effect after private wells were taken out of service.

Other Risk/Exposure Information?

Site/Project Name:	Jones Road Ground Water Plume

Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

The optimization review emphasized the importance of reducing the contaminant mass in three separate intervals, including the target Shallow WBZ. These are the primary zones sourcing the contamination confirmed in the underlying Lower Chicot aquifer, through the vertical migration pathway from the point of release at the surface to depth. By reducing the mass at these three intervals, the potential for a vertically migrating mass will diminish over time, resulting in decreasing concentrations in the Lower Chicot aquifer and a diminishing contaminant plume.

The source reduction targeted by this response action will contribute to an eventual cumulative stabilizing effect on this part of the Lower Chicot aquifer.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

No

Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

No. The dissolved contaminants in the Shallow WBZ are highly mobile and will continue to migrate vertically to underlying Lower Chicot aquifer unless actions are taken to reduce the contamination.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

The Harris County Commissioners Court adopted a rule entitled *Rules of Harris County For The Placement of Water Wells* on May 16, 2006. The rule prevents the drilling of a new domestic well into a contaminated groundwater plume or aquifer. Harris County designated an area around the Jones Road Site as an area of "no new wells" in a contaminated plume area. Harris County implements this rule by requiring an applicant to submit a request for a new water well. The proposed location is then checked to determine whether it is located in a "no new well" area. Although Harris County is responsible for enforcing this rule, the effectiveness of the above institutional control will be evaluated as a part of the five-year review process. The IC does not prevent current owners of water wells from using their well.

Other information on site/contaminant stability?

This response action for the Shallow WBZ will reduce 1 of 3 continuing ground water sources to the Lower Chicot aquifer, a significant water resource for both private and public water supply wells in this rapidly growing area of Houston. The Lower Chicot plume is not expected to stabilize (and will continue to migrate downgradient) while there are 3 active contaminant sources in the overlying soils and ground water. As an indication of aquifer use in this area, there were 231 active water wells (into the Lower Chicot) within ½ mile radius of the site before ~ 100 private wells were plugged under the EPA action.

Site/Project Name:	**Jones Road Ground Water Plume**

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g. 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g. standard deviation} or a central tendency values [e.g., average].)

Contaminant	***Media**	****Concentrations**
Tetrachloroethylene PCE	GW (Shallow WBZ)	Maximum: 28,600 ug/l (OB-02)
Trichloroethylene TCE	GW (Shallow WBZ)	Maximum: 1,730 ug/l (MW-01)
Vinyl Chloride VC	GW (Shallow WBZ)	Maximum: 161 ug/l (OB-02)

*(*Media: AR – Air, SL – Soil, ST – Sediment, GW – Groundwater, SW – Surface Water)*

*(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)*

Describe the characteristics of the contaminant with regards to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the clean up level of the contaminants discussed.)*

The Shallow WBZ averages 10' in thickness with an assumed porosity of 25%, and covers approximately 1.4 acres. Based on these assumptions, the volume of contaminated shallow ground water (at a depth 25-35 feet bgs) is approximately 1.1 million gallons. The core of the higher concentrated mass is tightly located from the point of the initial release to about 200' south. [Refer to "Figure 11: Distribution of Chlorinated Solvents in the Shallow Water-Bearing Zone"]

The 2010 ROD sets the remediation goals for ground water at the Drinking Water MCLs:

- Tetrachloroethylene 5 µg/L
- Trichloroethylene 5 µg/L
- cis-1,2-Dichloroethylene 70 µg/L
- trans-1,2-Dichloroethylene 100 µg/L
- Vinyl Chloride 2 µg/L

Describe any additional information on contaminant concentrations which could provide a better context for the distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc…..)*

Other information on contaminant characteristics?

Site/Project Name:	**Jones Road Ground Water Plume**

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)

(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

The response action being evaluated addresses ground water contamination in the Shallow WBZ, at 25-35 feet below ground surface. Exposure to burrowing animals is not likely at this depth. In addition, this is a highly urbanized area and unlikely ecological habitat. Again, the focus of action for this water-bearing zone is mitigate a continuing source and reduce further impacts the underlying Lower Chicot aquifer.

Would natural recovery occur if no action was taken? ☐ Yes ☐ No
If yes, estimate how long this would take.

Other information on threat to significant environment?

Site/Project Name:	**Jones Road Ground Water Plume**

Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)

(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The response action for the Shallow WBZ was part of the selected remedy in the 2010 ROD. A combination of in-situ bioremediation and pump/treat was selected for this zone. There has been public interest throughout the remedial investigation and proposal of remedial options. We anticipate renewed public interest as EPA presents the 2014 *Optimization Review* recommendations to reprioritize source reduction to protect the deeper regional aquifers. The hydraulic containment and pump/treat ground water remedy will be retained as an option and considered only after source mitigation is completed and results verified by monitoring. This redirection is consistent with the optimization recommendations, which also considered the presence of a previously undetected mass, as vapor, located in a section of the Lower Chicot, directly overlying the regional aquifer. This will be addressed in the upcoming Proposed Plan and ROD Amendment, scheduled for late 2015.

It will be important that one element of the current design and ROD will be funded and implemented prior to the ROD Amendment, particularly as this is the first part of the source-mitigation prioritized by the optimization team. And it will be critical that the redirection to source mitigation be expedited and that follow-up be regularly communicated with the community along the way. The early interest in the Lower Chicot ground water issues will be continued, with closer scrutiny expected over the next couple of years.

Describe the degree to which the State accepts the response action.

The State of Texas prepared the RI and FS reports as lead during that portion of the project. The Texas Commission on Environmental Quality has been an active participant in preparation of the Proposed Plan and the 2010 ROD. The State of Texas supports the Selected Remedy, which includes this response action for the Shallow WBZ.
Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc…
The recommendations provided by the optimization review team included a strategy which prioritizes source remediation and emphasizes performance monitoring. Recommendations were also made to address significant data gaps, particularly for a previously unidentified vapor source in an unsaturated part of the Lower Chicot. Most importantly, the recommendations from the review will reduce or eliminate the need for extensive Pump and Treat in the Lower Chicot WBZ and will reorder the current design elements. This response action under review is one of the priority actions recommended by the team.